Excerpt from the July 10, 1965, issue of *Science News Letter*

50 YEARS AGO

Earth to Mars in 229 days

The longest recorded journey in the history of man will reach its goal on Wednesday, July 14 — and keep on going. The Mariner 4 spacecraft ... will have covered more than 325 million miles in order to take a few television pictures and transmit some experimental radio signals. Together, these two activities should add a great deal to man's sketchy knowledge of the planet Mars.... Despite equipment failures, meteor showers, solar flares, and perhaps even "little green men," Mariner seems to be doing just fine.

UPDATE: Mariner 4 buzzed Mars right on schedule, sending back the first up-close pictures of another planet. The grainy images showed a desiccated, moonlike surface lacking in little green men. Since that first visit, 19 additional probes have flown past, orbited or landed on the Red Planet. Even more Mars probes — 25 — have failed. More recent missions have revealed that Mars was once warm and wet. Today there are seven active missions on or above our planetary neighbor.

THE SCIENCE LIFE

The moon bouncer

If the moon is up, there's a good chance Joseph Taylor is on his ham radio, using a homemade antenna in his backyard to bounce signals off the moon's pockmarked face. It's a skill Taylor began cultivating in 2003, shortly before he retired from Princeton University. There, he had used radio waves to probe the secrets of pulsars, the spinning, magnetized neutron stars that emit bursts of radiation with clocklike regularity.

The work earned Taylor and his Princeton colleague Russell Hulse the Nobel Prize in physics in 1993, for detecting a pulsar locked in orbit with a companion (probably another neutron star). In his Nobel lecture, Taylor said that scientific goals motivated him, but so did his affinity for "a good intellectual puzzle, and the quiet satisfaction of finding a clever solution."

The same attitude has driven Taylor, 74, to spend his retirement moon bouncing. "It's possible, but it's difficult," he says. "If you succeed, it's fun." The task entails reflecting a radio signal off the moon rather than off the upper atmosphere, as regular ham users do. Taylor calls it the Mount Everest of amateur radio.

"You need to have a very sensitive receiver, the biggest antenna that you can manage and as much power as is legal," Taylor says. (People often gawk at the contraption that soars above his garage on a 70-foot-tall telescoping tower not far from the university.)

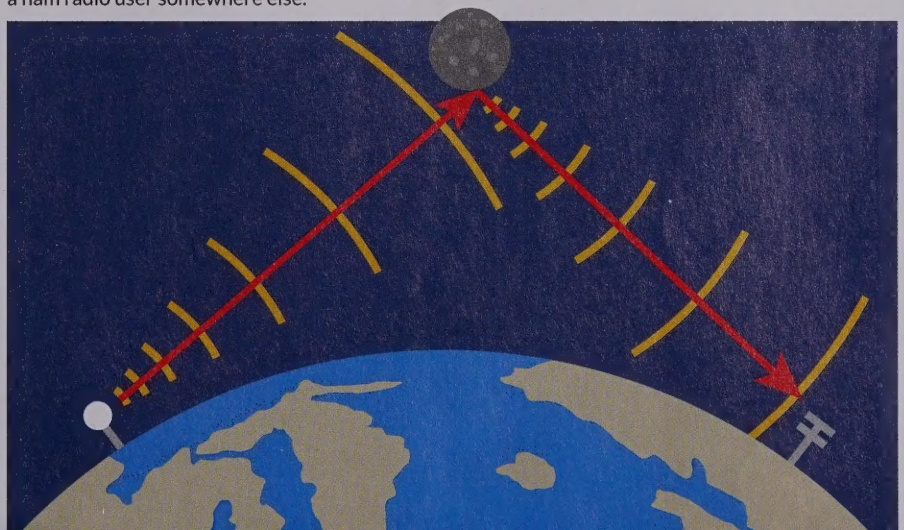
The purpose is to communicate with fellow ham users, so Taylor usually sends a broadcast appeal using the radio shorthand CQ for "seek you." He has received more than 3,000 replies — reflected off the moon — from about 900 people. It's just the latest phase of his lifelong radio hobby; Taylor got his amateur license at age 13.

When he's not moon bouncing, Taylor goes to his Princeton office and still studies pulsars. In 1974, Taylor and Hulse found the binary pulsar–neutron star system using the radio telescope at Puerto Rico's Arecibo Observatory. The cosmic tango of the pulsar and its companion provided evidence for the existence of gravitational radiation, a prediction of general relativity.

Taylor's radio hobby offers him much of the same excitement and reward as doing frontier science. Both require learning something new, he says. "So much the better if a good technical challenge is involved!"

—*Julia Rosen*

Radio reflections To send messages via the moon, ham radio operators send radio waves some 384,000 kilometers to the Earth's natural satellite. The waves bounce and hopefully are received by a ham radio user somewhere else.



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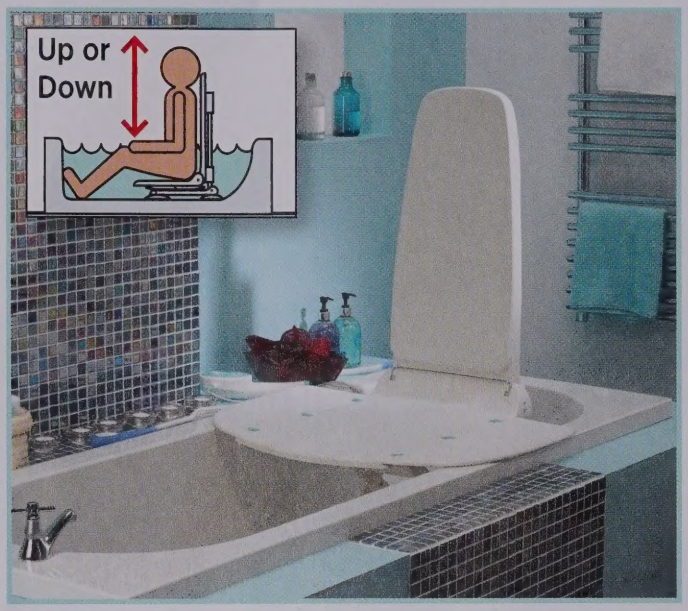

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